



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **Confirmation No. 6012**
Edwin Southern : Attorney Docket No. 99_1174
Serial No. 09/422,804 : Group Art Unit 1631
Filed October 22, 1999 : Examiner A. Marschel
ANALYSING POLYNUCLEOTIDE SEQUENCES: **Mail Stop AMENDMENT**

PATENT OFFICE FEE TRANSMITTAL FORM

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

THE COMMISSIONER IS AUTHORIZED
TO CHARGE ANY DEFICIENCY IN THE
FEE FOR THIS PAPER TO DEPOSIT
ACCOUNT NO. 23-0975.

Sir:

Attached hereto is a check in the amount of **\$180.00** to cover Patent Office fees relating to filing the following attached papers:

Information Disclosure Statement \$180.00

A duplicate copy of this paper is being submitted for use in the Accounting Division, Office of Finance.

The Commissioner is authorized to charge any deficiency or to credit any overpayment associated with this communication to Deposit Account No. 23-0975, with the EXCEPTION of deficiencies in fees for multiple dependent claims in new applications.

Respectfully submitted,

Edwin Southern

By Warren M. Cheek, Jr.
Warren M. Cheek, Jr.
Registration No. 33,367
Attorney for Applicant

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December 8, 2005

[Check No. 71544]
99_1174



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **Mail Stop: Amendment**
Edwin Southern : Attorney Docket No. 99_1174
Serial No. 09/422,804 : Group Art Unit 1631
Filed October 22, 1999 : Examiner A. Marschel
ANALYSING POLYNUCLEOTIDE **Confirmation No. 6012**
SEQUENCES

INFORMATION DISCLOSURE STATEMENT

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Sir:

Pursuant to the provisions of 37 CFR 1.56, 1.97 and 1.98, Applicants request consideration of the reference listed on attached form PTO-1449 and any additional information identified below in paragraph 3. A legible copy of each reference listed on the Form PTO-1449 is enclosed, except a copy is not provided for:

- ☐ each U.S. Patent and U.S. Patent application publication;
- ☐ each reference previously cited in the international application
PCT/_____; and/or
- ☐ each reference previously cited in prior parent application Serial No.
_____.

1a. ☐ This Information Disclosure Statement is submitted:

within three months of the filing date (or of entry into the National Stage) of the above-entitled application, **or**

before the mailing of a first Office Action on the merits or the mailing of a first Office Action after the filing of an RCE,

and thus no certification and/or fee is required.

- 1b. ☒ This Information Disclosure Statement is submitted

after the events of above paragraph 1a and prior to the mailing date of a final Office Action or a Notice of Allowance or an action which otherwise closes prosecution in the application, and thus:

(1) ☐ the certification of paragraph 2 below is provided, **or**

(2) ☒ the fee of \$180.00 specified in 37 CFR 1.17(p) is enclosed.

- 1c. ☐ This Information Disclosure Statement is submitted:

after the mailing date of a final Office Action or Notice of Allowance or action which otherwise closes prosecution in the application, and prior to payment of the issue fee, and thus:

the certification of paragraph 2 below is provided, and

the fee of \$180.00 specified in 37 CFR 1.17(p) is enclosed.

2. It is hereby certified

a. ☐ that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the Statement, or

b. ☐ that no item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in §1.56(c) more than three months prior to the filing of the Statement.

3. ☐ Consideration of the following list of additional information (including any copending or abandoned U.S. application, prior uses and/or sales, etc.) is requested.

4. For each non-English language reference listed on the attached form PTO-1449, reference is made to:
- a. ☐ a full or partial English language translation submitted herewith,
 - b. ☐ a foreign patent office search report (in the English language) submitted herewith,
 - c. ☐ the concise explanation contained in the specification of the present application at page,
 - d. ☐ the concise explanation set forth in the attached English language abstract,
 - e. ☐ the concise explanation set forth below or on a separate sheet attached to the reference:
5. ☐ A foreign patent office search report citing one or more of the references is enclosed.
6. ☐ Statement Under 37 CFR 1.704(d)

Each item of information contained in the Information Disclosure Statement was first cited in any communication from a foreign Patent Office in a counterpart application, and this communication was not received by any individual designated in §1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement.

7. ☒ The cited references are documents and Declarations filed in the EPO and Japan in relation to opposition proceedings and appeals.

Respectfully submitted,

Edwin Southern

By Warren M. Cheek, Jr.
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December 8, 2005

INFORMATION DISCLOSURE STATEMENT

PRE PTO 1449 (modified)

ATTY DOCKET NO.
99_1174SERIAL NO.
09/422,804U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICEAPPLICANT
Edwin SOUTHERNLIST OF REFERENCES CITED BY APPLICANT(S)
(Use several sheets if necessary)FILING DATE
October 22, 1999GROUP
1631

Date Submitted to PTO: December 8, 2005

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	4,216,245	8/1980	Johnson	427	2	
	AB	4,395,486	7/1983	Wilson et al.	435	6	
	AC	4,563,419	1/1986	Ranki et al.	435	6	

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO	
	AD	0 235 726	9/1987	EP				
	AE	0 171 150	2/1986	EP				
	AF	85/01051	3/1985	WO				
	AG	0 268 237	5/1988	EP				
	AH							

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	AI	Declaration from Radomir Crkvenjakov (with four exhibits), September 1996.
	AJ	Declaration from Ivan Labat , September 1996.
	AK	Statement from the Institute of Molecular Genetics and Genetic Engineering (IMGGE) in Belgrade, September 1996.
	AL	Statement by Professor Roger Ekins (with an abstract of a lecture given by him on 4/11/88 at a symposium, and a post-published paper corresponding to said lecture), December 1996.
	AM	Statutory Declaration of Dr. Nichlolas Vaughan Ashely (with Exhibit NVA1), May 1995.
	AN	Statutory Declaration of Dr. William Bains (with Exhibits WB1, WB2 and WB3), May 1995.

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT

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09/422,804

APPLICANT

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U.S. PATENT DOCUMENTS

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	BA	4,704,353	11/1987	Humphries et al.	435	4	
	BB	4,327,073	4/1982	Huang	424	1	
	BC	4,728,502	3/1988	Hamill	422	116	
	BD	5,002,867	3/1991	Macevicz	435	6	

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO	
	BE	88/01302	2/1988	WO				
	BF	86/03782	7/1986	WO				
	BG	0 238 332	9/1987	EP				
	BH	2 156 074	10/1985	GB				
	BI	0 237 362	9/1987	EP				

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	BJ	Declaration of Professor Lubert Stryer, January 1997.
	BK	Statutory Declaration of Dr. William Bains, January 1997.
	BL	Statutory Declaration of Dr. Nicholas Vaughan Ashley, January 1997.
	BM	Declaration of Edwin Mellor Southern (with Exhibits EMS1 and EMS2), January 1998.
	BN	Declaration of Dr. Thomas Gingeras, January 1999.
	BO	Declaration of Professor Calvin Quate, January 1999.

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	CA	5,202,231	4/1993	Drmanac et al.	435	6	
	CB	5,474,796	12/1995	Brennan	427	2.13	
	CC	5,429,807	7/1995	Matson et al.	422	131	

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO	
	CD	89/11548	11/1989	WO				
	CE	93/22480	11/1993	WO				
	CF	0 386 229	9/1990	EP				
	CG	0 281 927	9/1988	EP				
	CH	0 130 739	1/1985	EP				

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	CI	Declaration of Dr. Glenn Mc Gall, January 1999.
	CJ	Declaration of Edwin Mellor Southern, July 2001.
	CK	Bird & Bird, "Claimant's Notice of Experiments", In the United Kingdom Litigation between Oxford Gene Technology (OGT) v. Affymetrix, case no. HC 1999 02517, pp. 1-12, July 31, 2000, London, United Kingdom.
	CL	Declaration of Marvin Stodolsky, October 1996.
	CM	M. S. Urdea et al., "A novel method for the rapid detection of specific nucleotide sequences in crude biological samples without blotting or radioactivity; application to the analysis of hepatitis B virus in human serum", Gene, Vol. 61, 1987, pp. 253-264.
	CN	C. G. Miyada et al., "Oligonucleotide Hybridization Techniques", Methods in Enzymology, Vol. 154, No. 6, 1987, pp. 94-107.

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	DA	4,591,570	5/1986	Chang	436	518	
	DB						
	DC						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO	
	DD	0 228 075	7/1987	EP				
	DE	84/03151	8/1984	WO				
	DF	0 194 132	9/1986	EP				
	DG	0 063 810	11/1982	EP				
	DH	0 130 523	1/1985	EP				

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	DI	E. Calva et al., "Analysis of the in vitro Synthesis of 5'- γ - ³² P-labeled Transcripts from Coliphage λ by Gel Electrophoresis, RNA-DNA Hybridization, and RNase T1 Digestion", The Journal of Biological Chemistry, Vol. 255, No. 22, 1980, pp. 11011-11016.
	DJ	A. R. Dunn et al., "A Novel Method to Map Transcripts: Evidence for Homology between an Adenovirus mRNA and Discrete Multiple Regions of the Viral Genome", Cell, Vol. 12, September 1977, pp. 23-36.
	DK	G. Wengler et al., "A Study of Nucleotide Sequence Homology Between the Nucleic Acids of Different Alphaviruses", Virology, Vol. 78, No. 1, 1977, pp. 124-134.
	DL	J. M. Coffin et al., "Structure of the Genome of Moloney Murine Leukemia Virus: A Terminally Redundant Sequence" Cell, Vol. 13, No. 4, April 1978, pp. 761-773.
	DM	A. Palva et al., "Laboratory Methods, Quantification of α -Amylase mRNA in <i>Bacillus subtilis</i> by Nucleic Acid Sandwich with Hybridization", DNA, Vol. 7, No. 2, 1988, pp. 135-142.
	DN	R. Drmanac et al., "Sequencing of Megabase Plus DNA by Hybridization: Theory of the Method", abstract presented at Cold Spring Harbor Symposium on Gene Mapping and Sequencing, April 27-May 1, 1988, Cold Spring Harbor, NY.

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	EA						
	EB						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
	EC	0 142 299	5/1985	EP			
	ED	86/06487	11/1986	WO			
	EE	84/03564	9/1984	WO			
	EF	86/00991	2/1986	WO			
	EG	92/10092	6/1992	WO			

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	EH	R. Drmanac et al., "Sequencing by Hybridization , Theory of the Method", poster presented at Cold Spring Harbor Symposium on Gene Mapping and Sequencing, April 27-May 1, 1988, Cold Spring Harbor, NY.
	EI	I. Labat, "Subfragments as an informative characteristic of the DNA molecule - computer simulation", Search Report, Labat Thesis, (and English translation), 1988.
	EJ	R. Frank et al., "Simultaneous Synthesis and Biological Applications of DNA Fragments: An Efficient and Complete Methodology", Methods in Enzymology, Vol. 154, No. 13, 1987, pp. 221-251.
	EK	R. Frank et al., "A new general approach for the simultaneous chemical synthesis of large number of oligonucleotides: segmental solid supports", Nucleic Acids Research, Vol. 11, No. 13, 1983, pp. 4365-4377.
	EL	A. R. Brautigam et al., "Rapid Typing of Herpes Simplex Virus Isolates by Deoxyribonucleic Acid: Deoxyribonucleic Acid Hybridization", Journal of Clinical Microbiology, Vol. 12, No. 2, August 1980, pp. 226-234.
	EM	R. K. Saiki et al., "Analysis of Enzymatically Amplified β -globin and HLA-DQ α DNA with Allele-Specific Oligonucleotide Probes", Nature, Vol. 324, November 1986, pp. 163-166.

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	FA						
	FB						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
	FC	0 305 929	3/1989	EP			
	FD	0 304 202	2/1989	EP			
	FE						
	FF						
	FG						

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	FH	A. Rosenthal et al., "Solid-phase methods for sequencing of nucleic acids I. Simultaneous sequencing of different oligodeoxyribonucleotides using a new, mechanically stable anion-exchange paper", Nucleic Acid Research, Vol. 13, No. 4, November 4, 1985, pp. 1173-1184.
	FI	B. Lewin, Ed., "Genes", Third Edition, 1987, pp. 360-362, John Wiley & Sons, NY, NY.
	FJ	R. B. Wallace et al., "Hybridization of Synthetic Oligodeoxyribonucleotides to O _x 174 DNA: The Effect of Single Base Pair Mismatch", Nucleic Acids Research, Vol. 6, No. 11, 1979, pp. 3543-3557.
	FK	G. Beltz et al., "Isolation of Multigene Families and Determination of Homologies by Filter Hybridization Methods", Methods in Enzymology, Vol. 100, No. 19, 1983, pp. 266-285.
	FL	Doklady Biochemistry, Proceedings of the Academy of Sciences of the USSR, Biochemistry Section, Russian Original, Vol. 303, No. 1-6, November-December 1988, pp. 355-452 and Translation from Russian, Consultants Bureau, New York, Plenum Publishing Corporation, 1989, pp. 436-438.
	FM	F. C. Kafatos et al., "Determination of Nucleic Acid Sequence Homologies and Relative Concentrations by a dot Hybridization Procedure", Nucleic Acids Research, Vol. 7, No. 6, 1979, pp. 1541-1552.

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	GA						
	GB						
	GC						

FOREIGN PATENT DOCUMENTS

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	GD							
	GE							
	GF							
	GG							
	GH							

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	GI	R. J. Lipshutz et al., "Using Oligonucleotide Probe Arrays to Access Genetic Diversity", BioTechniques, Vol. 19, No. 3, 1995, pp. 442-447.
	GJ	T. R. Gingeras et al., "Hybridization Properties of Immobilized Nucleic Acid", Nucleic Acids Research, Vol. 15, No. 13, 1987, pp. 5373-5390.
	GK	P.T. Gilham, "The Synthesis of Polynucleotide-Celluloses and Their use in the Fractionation of Polynucleotides", J. Am. Chem. Soc., Vol. 86, November 20, 1964, pp. 4982-4985.
	GL	H. M. Geysen et al., "Strategies for Epitope Analysis using Peptide Synthesis", Journal of Immunological Methods, Vol. 102, 1987, pp. 259-274.
	GM	G. M. Church et al., "Genomic Sequencing", Proc. Natl. Acad. Sci., Vol. 81(7), April 1984, pp. 1991-1995.
	GN	V. J. Kidd et al., "α ₁ -Antitrypsin Deficiency Detection by Direct Analysis of the Mutation in the Gene", Nature, Vol. 304, July 1983, pp. 230-234.

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	HA						
	HB						
	HC						
	HD						

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	HE						
	HF						

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	HG	P. Masinkowski et al., "Cloning f cDNA Sequences of Hormone-regulated Gene from the MCF-7 Human Breast Cancer Cell Line", Nucleic Acids Research, Vol. 10, No. 24, 1982, pp. 7895-7903.
	HH	G. K. Sim et al., "Use of a cDNA Library for Studies on Evolution and Development Expression of the Chorion Multigene Families", Cell, Vol. 18, No. 4, December 1979, pp. 1303-1316.
	HI	Margaret L. M. Anderson et al., "Quantitative Filter Hybridisation", Nucleic Acid Hybridisation, A Practical Approach, 1985, pp. 73-111, IRL Press, Washington, D.C.
	HJ	W. Bains et al., "A Novel Method for Nucleic Acid Sequence Determination", J. Theor. Biol., Vol. 135, 1988, pp. 303-307.
	HK	U. B. Voss et al., "The Immobilization of Oligonucleotides and Their Hybridization Properties", Biochemical Society Transactions, Vol. 16, 1988, pp. 216-217.
	HL	Ghosh et al., "Covalent Attachment of oligonucleotides to Solid Supports", Nucleic Acids Research, Vol. 15, No. 13, 1987, pp. 5353-5372.
	HM	Federation Proceedings, Vol. 43, No. 7, May 4, 1984, Abstract 3669.
	HN	T. Maniatis et al., "Molecular Cloning", A Laboratory Manual, Cold Spring Harbor Laboratory, 1982, p. 282, Cold Spring Harbor, NY.

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	IB						

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	IC	C. R. Cantor et al., "Report on the Sequencing by Hybridization Workshop", Genomics, Vol. 13, 1992, pp. 1378-1383.
	ID	T. L. Bugawan et al., "Rapid HLA-DLB Typing Using Enzymatically Amplified DNA and Nonradioactive Sequencing-Specific Oligonucleotide Probes", Immunogenetics, Vol. 32, 1990, pp. 231-241.
	IE	Global Technology Group, Flier for PA Consulting Group, 1988.
	IF	Stephen P. A. Fodor et al., "Light-Directed, Spatially Addressable Parallel Chemical Synthesis", Science, Vol. 251, February 15, 1991, pp. 767-773.
	IG	U. Maskos et al., "A Study of Oligonucleotide Reassociation using Large Arrays of Oligonucleotides Synthesised on a Glass Support", Nucleic Acids Research, Vol. 21, No. 20, 1992, pp. 4663-4669.
	IH	U. Maskos et al., "Parallel Analysis of Oligodeoxyribonucleotide (Oligonucleotide) Interactions. I. Analysis of Factors Influencing Oligonucleotide Duplex Formation", Nucleic Acids Research, Vol. 20, No. 7, 1992, pp. 1675-1678.
	II	J. C. Williams et al., "Studies of Oligonucleotide Interactions by Hybridisation to Arrays: The Influence of Dangling Ends on Duplex Yield", Nucleic Acids Research, Vol. 22, No. 8, 1994, pp. 1365-1367.
	IJ	E. M. Southern et al., "Arrays of Complementary Oligonucleotides for Analysing the Hybridisation Behaviour of Nucleic Acids, Nucleic Acids Research, Vol. 22, No. 8, 1994, pp. 1368-1373.
	IK	M. S. Shchepinov et al., "Steric Factors Influencing Hybridisation of Nucleic Acids to Oligonucleotide Arrays", Nucleic Acids Research, Vol. 25, No. 6, 1997, pp. 1155-1161.
	IL	S. C. Case-Green et al., "Studies on the Base Pairing Properties of Deoxyinosine by Solid Phase Hybridisation to Oligonucleotides", Nucleic Acids Research, Vol. 22, No. 2, 1994, pp. 131-136.

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	JB						

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	JC	U. Maskos et al., "A Novel Method for the Parallel Analysis of Multiple Mutations in Multiple Samples", Nucleic Acids Research, Vol. 21, No. 9, 1993, 2269-2270.
	JD	M. J. Kozal et al., "Extensive Polymorphisms Observed in HIV-1 Clade B Protease Gene Using High-Density Oligonucleotide Arrays", Nature Medicine, Vol. 2, No. 7, July 1996, pp. 753-759.
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INFORMATION DISCLOSURE STATEMENT

FORM PTO 1449 (modified)

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U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	KA	5,486,452	1/1996	Gordon et al.	435	5	
	KB	4,994,373	2/1991	Stavrianopoulos et al.	435	6	
	KC	4,968,602	11/1990	Dattagupta	435	6	
	KD	4,961,915	10/1990	Martin	422	116	
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	KH	4,299,916	11/1981	Litman et al.	435	6	

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
	KI	84/01031	3/1984	WO			

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	KJ	Webster's Third New International Dictionary, G & C Merriam Company, Publishers, Springfield, Massachusetts, USA, 1966, pages with the definitions of the terms "solid" and "sheet".
	KK	The American Heritage Dictionary, Second College Edition, Houghton Mifflin Company, Boston, Massachusetts, 1991, page with the definition of the term "smooth".
	KL	The Dictionary of Ceramic Science and Engineering, Plenum Press, New York, NY, 1984 - definition of "smooth glass".
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	LB						
	LC						

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	LD						
	LE						
	LF						
	LG						
	LH						

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	LI	Letter to Simon Kiddle from Dr. Renzo Malvano, November 2002.
	LJ	Letter to Simon Kiddle from Dr. Gian Carlo Zucchelli, November 2002.
	LK	Declaration of Professor Alberto Albertini, November 2002.
	LL	Declaration of Dr. Gianni Messeri, November 2002.
	LM	Second Statement of Professor Roger Ekins, January 2003.

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*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	MA						
	MB						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
	MC						
	MD						

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	ME	Slides used in Professor Ekins' lecture at the International Biotech RIA '88 Conference in Florence on 11 th April 1988.
	MF	Lev. D. Gelb and K.E. Gubbins, "Characterization of Porous Glasses by Adsorption: Models, Simulations and Data Inversion", Fundamentals of Adsorption, Vol. 6, 1999, pp. 551-556.
	MG	Pharmacia Catalogue 1998, page describing Hybond-NX.
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	MI	E. M. Southern, Award Molecular Bioanalytics 2004, Biography.
	MJ	Award Molecular Bioanalytics 2004.
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	ML	News Events, Journal of Biomolecular Techniques, Vol. 15, 2004, pp. 152-153.

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